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10/787,074	02/19/2004	Michele C. Clayton	P17730	2852

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EXAMINER
ZHOU, YONG

ART UNIT	PAPER NUMBER
2419	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>06 July 2009</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,9,11-13,15,16,18-24,26,27 and 29-41* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,9,11-13,15,16,18-24,26,27 and 29-35* is/are rejected.

7)☒ Claim(s) *36-41* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claim Objections

1.   Claims 30-33 are objected to because of the following informalities:

Claims 30-33 recite the limitation "the initiated communication with the remote

device comprises sending…"   It is believed that the limitation refers to "the **initiating**

communication with the remote device comprises sending…" to be consistent with the

base claims.

Appropriate correction is required.

Allowable Subject Matter

2.   **Claims 36-41** are objected to as being dependent upon a rejected base claim,

but would be allowable if rewritten in independent form including all of the limitations of

the base claim and any intervening claims.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1-4, 6, 9, 11-13, 15, 16, 18-24, 26, 27 and 29-35 are rejected under 35

U.S.C. 103(a) as being unpatentable over Kracht, James E. (US 6,377,987), hereinafter

Kracht) in view of Suzuki, Yuichi (US 6,496,484, hereinafter Suzuki).

Regarding claims 1, 4 and 22, Kracht teaches operations of:

generating local topology information including information on local interfaces in

a local device and remote interfaces in at least one downstream remote device that

connect to the local interfaces identified in the local topology information, wherein the at

least one downstream remote device comprises an end device or expander connecting

to further end devices or expanders to which the local interfaces connect (Fig. 8, col. 3,

lines 52-66, col. 8, lines 10-11, col. 10, lines 29-42, wherein a method for determining a

physical topology of a network comprise steps of discovering a plurality of devices that

are located in the network based on each address within a set of network addresses

and creating and storing information representing the plurality of devices; determining

possible neighboring devices for each device in the plurality of devices; processing the

configuration information to create information representing neighboring devices and

each link between them; and creating and storing information that represents the

topology based on the gathered information);

for each connected remote interface, determining a device type of the

downstream remote device including the remote interface (col. 5, lines 29-30, col. 7,

lines 27-34, col. 8, lines 9-11, wherein the device type is determined); and

for each local interface attached to one remote interface in one of the

downstream remote devices whose determined device type is of a specified device

type, initiating communication with the remote interface to access remote topology

information from the downstream remote device indicating downstream devices

attached directly and indirectly to the remote device, wherein the downstream devices

with respect to the remote device comprise an end device or expander connecting to

further end devices or expanders to which the remote device connects (Fig. 8, col. 3,

lines 52-66, col. 8, line 64 through col. 9, line 7, wherein once the device type is

identified, the discovery mechanism sends a request message to the device to gather

additional information), and wherein the communication with the remote device to

access the remote topology information causes the remote device to gather the remote

topology information indicating downstream devices attached directly and indirectly to

the remote device, to periodically check whether the gathering of the remote topology

information has completed (col. 3, lines 63-67, col. 4, lines 8-9, col. 9, lines 4-7, col. 10,

lines 35-39, col. 17, lines 26-27, wherein a request message is sent to the remote

device to obtain its configuration information) and to return the remote topology

information to the local interface in response to determining that the gathering has

completed (col. 4, lines 4-9, col. 10, lines 35-39, col. 13, lines 1-8, wherein the discovery

mechanism obtains configuration information reported from the remote device).

However, Kracht does not expressly teach periodically checking whether the

remote device gathering of the remote topology information indicating downstream

devices attached directly and indirectly to the remote device has completed.

Suzuki teaches periodically checking whether the update completion message is

received from each of the other routing nodes (col. 2, lines 59-67, col. 6, lines 5-16).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine teachings from Suzuki into the Kracht invention to include periodically checking the completion of the topology update from the downstream devices which would produce predictable results.

Regarding claims 11 and 19, Kracht further teaches a system in communication with at least one remote device, wherein each remote device includes at least one remote interface and remote topology information, comprising:

at least one local interface (Fig. 10, #1020);

circuitry integrated with the motherboard capable of causing operations of method 1 to be performed (computer system, Fig 10, #1000, col. 18, lines 11-13);

Regarding claims 16 and 27, Kracht teaches a system in communication with at least one remote device and one upstream device, wherein each remote device includes at least one remote interface and remote topology information (Fig. 8, col. 15, lines 54-57), comprising:

at least one local interface (Fig. 10, #1020);

circuitry capable of causing the operations to be performed (col. 18, lines 11-13), the operations comprising:

receiving at the remote device a request for the remote topology information from the local device (col. 4, lines 8-9, col. 9, lines 4-7, col. 10, lines 35-39, wherein a request message is sent to the each device of known type to obtain its configuration information);

updating its topology based on information based on the configuration

information collected from the plurality of devices in response to the request (col.

3, lines 63-67, col. 4, lines 4-9, col. 9, lines 4-7, col. 10, lines 35-39, col. 17, lines

26-27, wherein a request message is sent to the remote device to obtain its

configuration information); and

transmitting the remote topology information to the local device in

response to determining that the remote topology information is completed (col.

4, lines 4-9, col. 10, lines 35-39, col. 15, lines 46-52, wherein the discovery

mechanism obtains configuration information reported from the remote device).

However, Kracht does not expressly teach periodically checking whether the

remote topology information is completed including information on downstream devices

directly and indirectly connected to the remote device.

Suzuki teaches periodically checking whether the update completion message is

received from each of the other routing nodes (col. 2, lines 59-67, col. 6, lines 5-16).

Therefore, it would have been obvious to one having ordinary skill in the art at

the time the invention was made to combine teachings from Suzuki into the Kracht

invention to include periodically checking the completion of the topology update from the

downstream devices which would produce predictable results.

Regarding claims 2, 12, 20 and 23, Kracht teaches the limitations of claims 1,

11, 19 and 22, respectively.

Kracht further teaches merging the local topology information with the remote

topology information (col. 17, lines 26-27).

Regarding claims 3, 13, 21 and 24, Kracht teaches the limitations of claims 1,

11, 19 and 22, respectively.

Kracht further teaches that the specified device type comprises an expander (hub

or switch, col. 8, lines 10-11).

Regarding claims 6, 18 and claims 29, Kracht teaches the limitations of claims

4, 16 and 27, respectively.

Kracht further teaches that the remote topology information is

completed in response to completing:

determining the device type of at least one additional device to which the remote

device connects (col. 5, lines 29-30);

receiving additional topology information from the at least one additional device

to which the remote device connects that is of the specified device type (col. 11, lines 7-

10); and

merging the received additional topology information with the remote topology

information (col. 17, lines 26-27).

Regarding claims 9, 15 and 26, Kracht teaches the limitations of claims 1, 11

and 22, respectively.

Kracht further teaches that the remote topology information includes an entry for

devices to which the remote device including the completed topology information

connects directly or indirectly, wherein each entry indicates a first address and first

interface of a first device, a second address and second interface of a second device

connected directly to the first device, and a device type of the second device, wherein

the remote device including the remote topology information connects directly or

indirectly to all first and second devices identified in the remote topology information

(Fig. 7, #746, #748, #750).

5.   Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kracht in

view of Suzuki and Robert Elliott (editor) ("Information Technology – Serial Attached

SCSI (SAS)", Project T10/1562-D, Revision 5, July 9, 2003), hereinafter Elliott.

Regarding claim 10, Kracht teaches the limitations of claim 1.

Kracht does not specifically teach that the devices comprise SAS devices and

wherein the interfaces comprise SAS PHYs, and wherein each device in the topology

has a unique SAS address.

Elliott teaches that the devices comprise SAS devices (p10, sec. 3.1.107, 1st line

and wherein the interfaces comprise SAS PHYs (p10, sec. 3.1.112, 1st line), and

wherein each device in the topology has a unique SAS address (p10, sec. 3.1.106, 1st

line).

Therefore, it would have been obvious to one having ordinary skill in the art at

the time the invention was made to replace the device in Kracht with SAS device taught

by Elliott to achieve the predictable result of identifying devices in network topology.

Regarding claims 30-33, Kracht teaches the limitations of claims 1, 11, 19 and

22, respectively.

Kracht further teaches that the initiating communication with the remote device comprises only one discovery request to the remote device to cause the remote device to return the remote topology information having all downstream devices directly and indirectly connected to the remote device (col. 3, lines 58-67, col. 4, lines 6-12, wherein one request is sent to each remote device to collect topology information regarding all the neighboring devices for the remote device).

Regarding claims 34 and 35, Kracht teaches the limitations of claims 16 and 27, respectively.

Kracht further teaches that the request from the upstream device comprises only one discovery request to the remote device to cause the remote device to return the remote topology information having all downstream devices directly and indirectly connected to the remote device (col. 3, lines 58-67, col. 4, lines 6-12, wherein one request is sent to each remote device to collect topology information regarding all the neighboring devices for the remote device).

Response to Arguments

6.   Applicant's arguments, filed July 6, 2009, have been fully considered but they are not persuasive.

Applicant argues that the cited Kracht discusses how configuration information is obtained from known devices, but does not teach that this is accomplished by sending a request to a remote device to cause the remote device to gather remote topology

information, to periodically check whether the remote device gathering has completed, and return the remote topology information when gathering has completed

Applicant further argues that nowhere does the cited Suzuki teach or suggest communicating with a remote device to cause the remote device to gather remote topology information from downstream devices, to periodically check whether the gathering is completed, and return the remote topology information when gathering is completed.

In response, the Examiner respectively disagrees. The rejections are based on a combination. One cannot show nonobviousness by attacking references individually where the rejections are based on a combination of references.

Kracht teaches a discovery mechanism that obtains configuration information reported from the remote device representing true neighbor devices and each link between them. In particular, a request message is sent to the remote device to obtain its configuration information (col. 3, lines 63-67, col. 4, lines 4-9, col. 9, lines 4-7, col. 10, lines 35-39, col. 13, lines 1-8, col. 17, lines 26-27). Suzuki teaches periodically checking whether the update completion message is received from each of the other routing nodes (col. 2, lines 59-67, col. 6, lines 5-16). Thus, the combination of Kracht and Suzuki meets the claim requirements.

Therefore, in view of the above reasons, the Examiner maintains the rejections.

Conclusion

7.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Yong Zhou whose telephone number is 571-270-3451.

The examiner can normally be reached on Monday - Friday 8:00am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chirag G. Shah can be reached on 571-272-3144. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Y. Z./
Yong Zhou
Examiner, Art Unit 2419

September 25, 2009

/Chirag G Shah/
Supervisory Patent Examiner, Art Unit 2419